



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/821,023	04/07/2004	Guangqiang Jiang	A369-USA	9230

24677 7590 09/07/2005

ALFRED E. MANN FOUNDATION FOR
SCIENTIFIC RESEARCH
PO BOX 905
25134 RYE CANYON LOOP, SUITE 200
SANTA CLARITA, CA 91380

EXAMINER

SAVAGE, JASON L

ART UNIT	PAPER NUMBER
----------	--------------

1775

DATE MAILED: 09/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/821,023	Applicant(s) JIANG ET AL.	
	Examiner Jason L. Savage	Art Unit 1775	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) 14-30 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. <u>20050822</u> . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>20040407</u> . | 6) <input type="checkbox"/> Other: ____. |

Art Unit: 1775

stainless steel part and titanium part however there is no limitation on what materials comprise the filler nor any limitation regarding the filler structure comprising two separate foil layers of different materials.

Inventions II and III are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the inventions differ in that the invention of Group II is a method which comprises placing a laminated filler with at least one nickel foil layer and at least one titanium foil layer which bonds a stainless steel part and titanium part whereas the invention of Group III is a method of forming an assembly wherein a filler is positioned between a stainless steel part and titanium part however there is no limitation on what materials comprise the filler nor any limitation regarding the filler structure comprising two separate foil layers of different materials.

Specification

The Specification is objected to because:

On page 1, first paragraph, line 3, Applicant recites Application Serial No. 10/714,913; however, upon review it appears Applicant intended to recite Serial No. 10/714,193 which has the recited title and contains similar subject matter to the instant Application. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 103

Art Unit: 1775

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al. (US 6,722,002).

Chang teaches a brazed component assembly comprising metal parts which are bonded together by a compact filler material comprising laminated foil layers (col. 2, ln. 38-45). Chang further teaches a brazed component assembly comprising a 316 stainless steel metal part bonded to a composite filler material comprising two outer layers of nickel and an inner core layer of titanium (col. 6, ln. 52-57). Chang further teaches that a titanium metal part can be bonded to the other side of the filler material to form a composite assembly (col. 6, ln. 65-67).

Although Chang does not exemplify an embodiment wherein a component assembly comprises a stainless steel part bonded to a titanium part via a filler layer comprising nickel and titanium foils, such a combination would have been obvious to one of ordinary skill in the art at the time of the invention given the teachings of Chang.

Regarding the limitation that the assembly be suitable for use in living tissue, since the assembly of Chang has the same structure and same materials as that claimed by Applicant, it would have been just as suitable for use in living tissue as that claimed by Applicant.

Art Unit: 1775

Regarding claim 2, an assembly comprising the filler having two outer layers of nickel as described by Chang (col. 6, ln. 52-57) would meet the claim limitation of a nickel foil layer being adjacent to the titanium part.

Regarding claim 3, the Ni/Ti/Ni filler structure taught by Chang (col. 6, ln. 52-57) would meet the claim limitation.

Regarding claim 4, Chang is silent to the filler comprising a top and bottom surface of titanium. However, Chang teaches that multiple foil layers of Ti can be employed in the filler material (col. 5, ln. 1-9). It would have been obvious to one of ordinary skill to have used multiple foil layers of Ti to form the laminated filler since Chang teaches multiple Ti layers may be employed. Absent a teaching of the criticality or showing of unexpected results from the multiple titanium foil layers being the top and bottom layer, it would not provide a patentable distinction over the prior art since the order in which the foil layers are stacked to form the laminate filler is merely a design choice and does not patentably distinguish the present invention over the prior art of record. *Eskimo Pie Corp. v. Levous et al.*, 3 U.S.P.Q. 23. *In re Rose* 105 U.S.P.Q. 237. *In re Dailey* 149 U.S.P.Q. 47.

Regarding claim 5, Chang teaches the stainless steel part is a 300 series stainless steel such as 316 (col. 6, ln. 52-57).

Regarding claims 6 and 8, although Chang is silent to the use of 316L stainless steel and Ti-6Al-4V, it would have been within the purview of one of ordinary skill in the art to have recognized that a wide variety of stainless steel and titanium alloys could be employed in the component assembly of Chang with a reasonable expectation of

Art Unit: 1775

success. Absent a teaching of the criticality or showing of unexpected results from the use of the claimed alloys, they would merely be a design choice and thus do not provide a patentable distinction over the prior art.

Regarding claim 7, Chang teaches the titanium part may be a titanium alloy (col. 6, ln. 58-67).

Regarding claim 9, Chang teaches the filler reacts with and bonds to the metal parts (col. 6, ln. 6-14).

Regarding claim 10, Chang teaches the filler thickness of the nickel and titanium composite filler is typically 0.010 inches thick and that the thickness may be further reduced by cold rolling (col. 6, ln. 52-57). Chang further teaches that the brazing temperature is about 950°C (col. 7, ln. 1-5 and col. 8, ln. 7-19) which is less than the melting point of the titanium and stainless steel parts but greater than a melting point of the Ni-Ti eutectic formed from the filler material.

Regarding claims 11-12, the claims are drawn to article, not the method of making. Absent a teaching of the criticality or showing of unexpected results due to forming the filler foil layers by the claimed methods, they would not provide a patentable distinction over the prior art. Furthermore, it would have been obvious to have used nickel and titanium foils formed by any known method for the filler in the assembly of Chang with a reasonable expectation of success.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al. (US 6,722,002) in view of Cusano et al. (US 3,994,430).

Art Unit: 1775

Chang teaches what is set forth above however it is silent to at least one of the filler layers being formed from metallic particulate. Cusano teaches a method of bonding metals to other metal substrates (col. 2, ln. 32-33). Cusano further teaches that a bonding agent may be used to bond the metal part to the other metal part and that the agent may be in particulate form (col. 3, ln. 20-30). Although it is recognized that Cusano teaches that the bonding is a direct bond wherein no intermediate layer of solder metal or the like is employed, Cusano is merely provided as a teaching that it is known in the art that bonding materials for bonding metal parts can be provided in particulate form. It would have been obvious to one of ordinary skill in the art to have recognized that bonding agents or layers such as the filler layers of Chang could be employed in a variety of forms including as layers comprising particulates with a reasonable expectation of success.

It is well settled that the test of obviousness is not whether the features of one reference can be bodily incorporated into the structure of another and proper inquiry should not be limited to the specific structure shown by the references, but should be into the concepts fairly contained therein, and the overriding question to be determined is whether those concepts would suggest to one of ordinary skill in the art the modifications called for by the claims, *In re Van Beckum*, 169 USPQ 47 (CCPA 1971), *In re Bozek*, 163 USPQ 545 (CCPA 1969); *In re Richman*, 165 USPQ 509 (CCPA 1970); *In re Henley*, 112 USPQ 56 (CCPA 1956); *In re Sneed*, 218 USPQ 385 (Fed. Cir. 1983).

In response to the issue whether the reference is nonanalogous art, it has been held that the determination that a reference is from a nonanalogous art is twofold. First, one decides if the reference is within the field of the inventor's endeavor. If it is not, one proceeds to determine whether the reference is reasonably pertinent to the particular problem with which the inventor was involved, *In re Wood*, 202 USPQ 171, 174. In the instant case, both Chang and Cusano are generally drawn to bonding metal parts through the use of bonding assisting agents or materials.

Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art in view of Chang et al. (US 6,722,002).

The admitted prior art from claim 30 of the present Application states that it is known to bond a stainless steel part to a titanium part with a filler material in order to form a component assembly for placement in living tissue (Jepson claim 30).

The admitted prior art is silent to the filler material being a composite comprising at least one foil layer of nickel and one foil layer of titanium. Chang teaches that it is beneficial to use composite foils to form a laminate filler to bond metal parts. By using the laminate filler, the desired composition of the brazing alloy which bonds the metal parts together can be formed by simply varying the thicknesses of the foil layers (col. 3, ln. 53-59). Chang further teaches a composite filler material comprising foil layers of nickel and titanium is suitable for use in bonding a component assembly comprising stainless steel and titanium parts (col. 6, ln. 44-57).

Art Unit: 1775

It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the assembly of the prior art by employing the laminate filler taught by Chang comprising foil layers of nickel and titanium so the alloy chemistry of the bonding filler layer could be readily adjusted by varying the thickness and/or number of layers of each material in the filler laminate.

Regarding claims 2-3, an assembly comprising the laminate filler having two outer layers of nickel as described by Chang (col. 6, ln. 52-57) would meet the claim limitations.

Regarding claim 4, the prior art is silent to the filler comprising a top and bottom surface of titanium. However, Chang teaches that multiple foil layers of Ti can be employed in the filler material (col. 5, ln. 1-9). It would have been obvious to one of ordinary skill at the time of the invention to have used multiple foil layers of Ti to form the laminated filler for the assembly of the prior art since Chang teaches multiple Ti layers may be employed. Absent a teaching of the criticality or showing of unexpected results from the multiple titanium foil layers being the top and bottom layer, it would not provide a patentable distinction over the prior art since the order in which the foil layers are stacked to form the laminate filler is merely a design choice and does not patentably distinguish the present invention over the prior art of record. *Eskimo Pie Corp. v. Levous et al.*, 3 U.S.P.Q. 23. *In re Rose* 105 U.S.P.Q. 237. *In re Dailey* 149 U.S.P.Q. 47.

Art Unit: 1775

Regarding claims 5 and 7, the admitted prior art teaches the stainless steel part may be 200, 300 or 400 series stainless steel and that the titanium part may be formed from titanium or titanium alloys (Jepson claim 30).

Regarding claims 6 and 8, although the prior art is silent to the use of 316L stainless steel and Ti-6Al-4V, it would have been within the purview of one of ordinary skill in the art to have recognized that a wide variety of stainless steel and titanium alloys could be employed in the component assembly of the admitted prior art as modified by Chang with a reasonable expectation of success. Absent a teaching of the criticality or showing of unexpected results from the use of the claimed alloys, they would merely be a design choice and thus do not provide a patentable distinction over the prior art.

Regarding claim 9, the admitted prior art teaches a method of bonding the assembly by compressing the assembly and heating it to a temperature above the melting point of the filler material. As such, the filler would react with and bond to the metal parts.

Regarding claim 10, the admitted prior art is silent to the thickness of the filler material. However, Chang teaches the filler thickness of the nickel and titanium composite filler is typically 0.010 inches thick and that the thickness may be further reduced by cold rolling (col. 6, ln. 52-57). It would have been obvious to one of ordinary skill in the art to have used the nickel and titanium composite laminate of Chang having a thickness of 0.010 inches or less in the assembly of the admitted prior art since materials having such a thickness are known to be suitable for use in forming composite assemblies.

Art Unit: 1775

Regarding claims 11-12, the claims are drawn to article, not the method of making. Absent a teaching of the criticality or showing of unexpected results due to forming the filler foil layers by the claimed methods, they would not provide a patentable distinction over the prior art. Furthermore, it would have been obvious to have used nickel and titanium foils formed by any known method for the filler in the assembly of the admitted prior art as modified by Chang with a reasonable expectation of success.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over admitted the prior art in view of Chang et al. (US 6,722,002) as applied to claims 1-12 above and in further view of Cusano et al. (US 3,994,430).

The prior art teaches what is set forth above however it is silent to at least one of the filler layers being formed from metallic particulate. Cusano teaches a method of bonding metals to other metal substrates (col. 2, ln. 32-33). Cusano further teaches that a bonding agent may be used to bond the metal part to the other metal part and that the agent may be in particulate form (col. 3, ln. 20-30). Although it is recognized that Cusano teaches that the bonding is a direct bond wherein no intermediate layer of solder metal or the like is employed, Cusano is merely provided as a teaching that it is known in the art that bonding materials for bonding metal parts can be provided in particulate form. It would have been obvious to one of ordinary skill in the art at the time of the invention to have recognized that bonding agents or layers such as the filler layers in the assembly of the admitted prior art as modified by Chang could be


Art Unit: 1775

employed in a variety of forms including as layers comprising particulates with a reasonable expectation of success.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason L. Savage whose telephone number is 571-272-1542. The examiner can normally be reached on M-F 6:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on 571-272-1535. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jason Savage
8-22-05


DEBORAH JONES
SUPERVISORY PATENT EXAMINER